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IE 492-H01: Engineering Management

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NEW JERSEY INSTITUTE OF TECHNOLOGY

Department of Mechanical and Industrial Engineering

Course Summary:

COURSE:	IE 492 – 451, IE 492 – 455, IE 492 – H01– ENGINEERING MANAGEMENT
SEMESTER:	FALL 2020 – ONLINE ONLY
INSTRUCTOR:	Ankush Karnik BS. IE, MS. EM, MBA, CSSGB, PMP, CSM, SAFe POPM, EIT Tel: (732) 893 0947 Email: apk1932@njit.edu
TEXTBOOKS:	<ul style="list-style-type: none"> ▪ Gido, J. and Clements, J., Successful Project Management, 6th or 7th Edition, South-Western Publishing, 2009, 2012, 2015 ▪ Sepulveda, J., Souder, W. and Gottfried, B., Schaum's Outline of Theory and Problems of Engineering Economics, McGraw-Hill, Inc., 1984 <p>Note: You will also need to review additional sources – online or from library in case the book falls short to thoroughly explain a specific concept, or if you want to learn more about a specific topic.</p>
COURSE DESCRIPTION:	<p>This course covers the fundamental concepts of Engineering Economics and Project Management. It is designed to introduce engineering majors to application of basic finance, time value of money, and project management principles to general engineering problems. Application of these principles helps facilitate decision making in practice.</p> <p>There are two parts to this course.</p> <p>Project Management section of the course will cover all phases of the project life cycle, starting from Project Initiation through Project Closeout. We will review various tools and methodologies that have been effective in managing various aspects of the project. We will also touch on popular project management methodologies applicable to a wide range of projects including engineering and technology projects. These concepts include Agile, Scrum, Kanban etc.</p> <p>Engineering Economics section of the course will encompass the following topics: Interest Rates, Time Value of Money, Estimating Capital Projects, Economic Feasibility Analysis and Decision Making.</p> <p>To reinforce the concepts learnt in class, we will have several assignments along the way that may include problems/questions, mini cases, and a term project.</p>

	<p>There will also be three quizzes and a final exam in this course.</p> <p>It is expected that students will work in teams for the term project. INDIVIDUAL PROJECTS ARE NOT PERMITTED IN THIS COURSE – NO EXCEPTIONS.</p>
COURSE LEARNING OUTCOMES:	<ul style="list-style-type: none"> • Effectively apply knowledge of Engineering Management including Engineering Economics and Project Management in real world situations. • Identify, formulate, and solve engineering problems. • Effectively function on multidisciplinary and virtual teams. • Apply course learnings and modern – popular management tools to engineering practice.
INSTRUCTIONAL METHODS:	<p>This section is distance learning / online section, and therefore all course materials will be delivered through online medium.</p> <p>Canvas:</p> <ul style="list-style-type: none"> • Canvas is an online platform used by NJIT to facilitate delivery of online lectures and materials. • Accessed via canvas.njit.edu • PowerPoint slides, homework problems, video links and other supporting materials will be uploaded for student review and download. • Assignments will be posted on Canvas. • Submissions will be via Canvas as well. • Canvas will also serve as a tool for group collaborations and discussions related to all class assignments and projects. <p>Textbooks/Assigned Literature:</p> <ul style="list-style-type: none"> • There are two textbooks for this course. Both are required as one of the textbook covers Engineering Economics and the other covers Project Management section of this course. • It is expected that the students will read and refer to assigned textbooks as we will be covering materials from the same. Homework assignments will also be mostly from textbook. Lecture materials make the best effort to explain the material, but students must read/refer to the assigned literature for detailed explanation and understanding of the topic. <p>Web Resources:</p> <ul style="list-style-type: none"> • Links to articles, videos, and other materials will be posted in Canvas. These links will be helpful in reinforcing concepts learned in this course. <p>It is also expected that students review online resources and news in order to reinforce concepts learnt in class. It is all about connecting theory to real-life situations!</p>

NJIT HONOR CODE:	<p>Please read and follow the NJIT University Code for Academic Integrity</p> <p>Any violation of the code will null and void all assignments and grades for this course. The alleged action will be reported to the Dean of Students office for further action. The NJIT Integrity and Honor Code site is provided below.</p> <p>http://www5.njit.edu/doss/policies/honorcode/index.php</p>
PERSONAL MATTERS & HEALTH ISSUES:	<p>The instructor should not be exposed to family matters, health, hospitalization, or other serious personal matters. Should a serious event happen, please communicate the issue directly and solely to the Dean of Students who will advise on how to proceed.</p>
ACADEMIC INTEGRITY:	<p>Since this is a distance learning / online course, all assignments, projects, and quizzes/exams can be completed from any location. It is expected that students will not collaborate with each other while completing assignments, quizzes, or exams unless otherwise indicated. Please note that tools utilized for this online course allow the instructor to identify and determine if the students were collaborating.</p> <p>Such instances and any occurrences of collaboration, when identified, are directly communicated to the department and the Dean of Students for further action.</p>
ASSIGNMENTS:	<p>To gain maximum benefit from the course, there are a mix of individual and group assignments to be completed over the course of the semester.</p> <p>There will be assignments due each week. Typically, individual assignments will be due on Fridays, and group assignments will be due on Sundays.</p> <p>Please make sure that the assignments are submitted via Canvas in a designated area on time every week.</p> <p>Assignments will <u>NOT</u> be accepted via email or any other medium. NO EXCEPTIONS!</p> <p>Please make sure you read the syllabus carefully and get to know the assignment due dates.</p>
QUIZZES & EXAMS DELIVERY	<p>Quizzes and Exams in this course will be administered online via WebEx, Zoom, or ProctorU. In all cases students will need to have the video camera enabled for the duration of the exam. Also, the exam must be taken at the assigned time and date. Connection details for each quiz and exams will be posted in Canvas as the date nears.</p>

DELIVERABLE DUE DATES:	<p>All assignments due dates are indicated in the 'Detailed Course Schedule' section in this document. Assignment must be received in Canvas by 11:55pm on the day they are due. <u>It is recommended that you do not wait until the last minute for submission to avoid any technical issues etc.</u></p> <p><u>Any assignment not received in Canvas by the due date/time will have a late penalty and 5% of assignment the grade will be automatically deducted for each day the assignment is later.</u> Assignments will not be accepted via any other medium.</p> <p>The last day to submit all assignments for this course is December 10, 2020, which is the last day of the class. No assignments will be accepted after December 10, 2020. Upload capability in Canvas will be disabled.</p>
GRADING:	<p>Please see Grading schedule mentioned in the 'Weighted Grades' section of this document</p> <p>This course will follow NJIT recommended grading schedule as follows:</p> <p>A: for superior performance (90% or higher) B+: for excellent performance (87% to 89.99%) B: for very good performance (82% to 86.99%) C+: for good performance (76% to 81.99%) C: for acceptable performance (70% to 75.99%) D: for minimum performance (65% to 69.99%) F: otherwise / inadequate</p>
SOFTWARE PROGRAMS:	<p>It is expected that the students will have access to Microsoft Excel, Microsoft Word and Microsoft Project or similar throughout the duration of this course. The course contains several exercises that need to be completed in Microsoft Excel and Microsoft Project or similar. Furthermore, the final project for the course will require the use of these software applications as well. No other software is required for this course. Note that depending on your familiarity with Microsoft Excel, you may be able to use Microsoft Excel to create project plans for the term project. We will cover this in detail as we progress through the semester.</p> <p>There are some free open source applications comparable to Microsoft Project but not as extensive as Microsoft Project:</p> <ul style="list-style-type: none"> • Trello • Freecamp • Basecamp <p>Most web based software may also allow the student groups to collaborate where an account can be created for each member of the group to access required information.</p>

	<p>We will discuss project management software in detail as we progress through the course.</p> <p>You may want to download Microsoft Project from NJIT IST website. https://ist.njit.edu/software. It is available for current students.</p>
INSTRUCTOR AVAILABILITY:	<p>I will generally be available every day of the week. I will be checking emails regularly and will respond within 24 hours. I will also be available by phone if needed, but it is best to reach me via email first. However, feel free to call me in case you do not hear from me within 24 hours, or if you have an urgent question.</p> <p>There are days when I may be travelling for work and during those days I may be slow in responding to emails or queries, however it should not affect my availability or the class schedules overall.</p>
PEER EVALUATIONS:	<p>As in the corporate world we will have peer evaluations in this course. You will be grading your group members at the end of the semester or various attributes. Peer evaluations will be counted towards the final grade for this course. This is typically known as 360-degree evaluation. Each student must submit a peer evaluation.</p> <p>PLEASE NOTE: FAILURE TO SUBMIT A PEER EVALUATION WILL SEVERLY AFFECT THE PROJECT GRADE. LATE SUBMISSIONS WILL NOT BE ACCEPTED. PLEASE SEE THE EVALUATION DUE DATE MENTIONED IN THE DETAILED COURSE SCHEDULE.</p>
COURSE EVALUATIONS:	<p>Like other courses at NJIT, you will have an opportunity to submit course evaluation, where you will grade the course, content, and me. Your feedback is very important to me and to NJIT and will help me in improving this course going forward. It is all about continuous improvements!</p>

Weighted Grades:

Class Participation (Online) – contribution to forums, questions, and case studies	20%
Quizzes (3 total)	15%
Term Project	25%
Final Project Report and Presentation	15%
Peer Evaluation/Group Performance	5%
Final Exam	20%

SYLLABUS CONTINUED ON THE NEXT PAGE

Detailed Course Schedule

WEEK #	DATE	TOPICS	ASSIGNMENT	SUBMISSION DATES
1	9/1/2020 – 9/6/2020	Engineering Management & Project Management Concepts	Gido chapter 1 Introductions (Class) (I) Acknowledgement (I)	9/6/2020 9/6/2020
2	9/7/2020 – 9/13/2020	Project Identification & Initiation Project Life Cycle, RFP – Proposal Preparation, Contracts	Gido chapter 2 & 3 Assigned questions (I)	9/11/2020
3	9/14/2020 – 9/20/2020	Project Planning, Performing & Controlling, Resource Utilization Scope, Work Breakdown Structure, Schedule <i>Project Teams Formed – Instructor Assigned</i>	Gido Chapter 4, 5 & 6 Assigned questions (I) Team building activity (G)	9/18/2020 9/20/2020
4	9/21/2020 – 9/27/2020	Quiz1	Quiz 1 – Gido Chapter 1- 6 (I) Note: Quiz will be available at a specific time. Details will be communicated later. All students must take the quiz at the scheduled time.	9/27/2020
5	9/28/2020 – 10/4/2020	Project Organizations Project Manager, Project Team	Gido Chapter 10 & 11 Assigned questions (I) Term project deliverable #1 (G) - Proposal	10/2/2020 10/4/2020
6	10/5/2020 – 10/11/2020	Project Organizations, Project Communication & Documentation Project Management Organizational Structure, Communication Types, Change Control, Communication Tools & Methodologies	Gido Chapter 12 & 13 Assigned questions (I)	10/9/2020

7	10/12/2020 – 10/18/2020	Project Accounting & Finance, Risks & Issues Management, Project Closeout Estimating Costs, Budgeting, Earned Value, Required Tools, Identify – Assess – Mitigate Risks, Issue Resolution, Project Close Out Process, Tools, and Deliverables	Gido Chapter 7, 8 & 9 Assigned questions (I) Term project deliverable #2 (G) – Project Report	10/16/2020 10/18/2020
8	10/19/2020 – 10/25/2020	Quiz 2	Quiz 2 – Gido Chapter 7 – 13 (I) Note: Quiz will be available at a specific time. Details will be communicated later. All students must take the quiz at the scheduled time.	10/25/2020
9	10/26/2020 – 11/1/2020	Time Value of Money & Compounding Interest Rates, Inflation, Time Value of Money, Cash Flows, Single-Payment, Uniform-Series, Gradient Series, Annual Compounding	Schaum's Chapter 1 & 2 Assigned questions (I) Assigned problems (G)	10/30/2020 11/1/2020
10	11/2/2020 – 11/8/2020	Basic Relationships Algebraic Relationships, Discrete, Periodic Compounding	Schaum's Chapter 3 & 4 Assigned questions (I) Assigned problems (G)	11/6/2020 11/8/2020
11	11/9/2020 – 11/15/2020	Continuous Compounding & Economic Equivalence and Valuation Evaluation Methodologies Continuous Compounding, Equivalence, MARR, FMV	Schaum's Chapters 5 & 6 Assigned questions (I) Assigned problems (G)	11/13/2020 11/15/2020
12	11/16/2020 – 11/22/2020	Quiz 3	Quiz 3– Schaum's Chapter 1 -6 (I) Note: Quiz will be available at a specific time. Details will be communicated later. All students must take the quiz at the scheduled time.	11/22/2020

13	11/23/2020 – 11/25/2020	Evaluation Methodologies Present Worth, Future Worth, NPV, Rate of Return, Payback, ROI, Cost-Benefit Ratio, Budget Allocation	Schaum's Chapters 7 & 8 <i>Assigned questions (I)</i>	11/25/2020
	11/26/2020 – 11/29/2020	Thanksgiving Break – Enjoy!		
14	11/30/2020 – 12/6/2020	Economic Feasibility Analysis Project selection, Retirement and replacement decisions/economics, Depreciation	Schaum's Chapters 9, 10 & 11 <i>Assigned questions (I)</i> <i>Assigned problems (G)</i>	12/4/2020 12/6/2020
15	12/7/2020 – 12/10/2020	Final Exam Review	Review all course materials <i>Term project deliverable #3 (G) - Final Report</i> <i>Term project submission (PPT Presentation) (G)</i> <i>Peer evaluation submission (I)</i> <i>(Must be submitted by due date for project credit – no exceptions!)</i>	12/9/2020 12/9/2020 12/10/2020
	12/11/2020 –12/14/2020	Reading Days		
	12/19/2020	Final Exam (Comprehensive – Engineering Economics and Project Management) <small>Note: FINAL EXAM will be available at a specific time. Details will be communicated later. All students must take exam at the scheduled time.</small>		Final Exam – 12/19/2020

NOTE:

- **(I) indicated individual submissions**
- **(G) indicates group submissions**